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COMPLETE SPECIFICATION

An Improved Process for Preserving Fruit, Vegetables, Greens and Eggs

We, Dr. ALFRED ROMWALTER, of Meyne-telep, Sopron, Hungary, Dr. SÁNDOR KIRÁLY, of Kiss utca 25, Sopron, Hungary, GÉZA FÁI, of Abonyi ut 27, Budapest, Hungary, and Dr. MICHAEL RÁCZ, of Stefania ut 24, Budapest, Hungary, all of Hungarian nationality, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to a process for maintaining the freshness and vitality of fruits, vegetables, greens, and eggs, that is, organic goods which can be regarded as masses of, or containing, living entities having slow metabolism.

Intact plants and all their parts will in their place of growth keep long even in moist and hot weather, whereas plucked fruit or harvested vegetables or greens will only keep without decay at summer temperature if artificial cooling is employed. At ordinary temperature, and particularly in hot weather, all these goods decay rapidly, particularly if a fairly large quantity of the said goods is being stored or transported without ventilation.

Putrefaction or decay is caused by various bacteria and/or by unicellular and multi-cellular fungi, by fermentation and rotting processes. Such organisms causing decay are always present in the first place on the surface of the said goods, but according to more recent observations they are also present in their interior. For instance, on the surface of perfectly intact fruit, containing a high proportion of sugar, and of a pulpy and juicy nature, bacteria causing rotting and various kinds of mildew fungi, and in the interior of such fruit fungi of the saccharomyces kind immediately begin their work of destruction as soon as such fruit is stored in relatively large heaps in a warm place. On cooling decay is delayed, because at a low temperature the biological activity of the destructive organisms ceases almost completely. But decay will also be delayed at the place of production of the fruit, on the mother plant, although there the fruit may possibly be exposed to summer heat, because effective action on the part of the fungi on the surface of the fruit is impeded by the drying effect of light and particularly of air, whereas action on the part of the fungi of the saccharomyces kind is impeded by the undisturbed gas exchange breathing of the fruit. Experience has shown that the spontaneous gas production of such fruit stored in heaps hastens ripening, particularly owing to the unsaturated hydrocarbons contained in the gas exhaled, which ripening may for instance also be accelerated artificially in the fruit store-room by means of coal gas. If, accordingly, the heap of fruit is ventilated artificially and its own gas production is driven out by means of fresh air from the interstices of the heap, such "self-ripening" will be avoided and unhampered breathing will, in the pulp of the fruit also, impede the propagation of fungi of the saccharomyces kind. However, the current of air preventing self-ripening and alcoholic fermentation will at the same time also exercise a drying effect and as the fruit stored in a heap can no longer enjoy the supplementing of water by the mother plant, ventilation which on the one hand is useful, will on the other hand also damage the fruit stored because it will tend to wither it. This drying effect can be excluded by the employment of air saturated with water vapour, but this means paving the way for the work of the various kinds of bacteria and fungi living on the surface of the fruit. Accordingly, before applying the air saturated with water vapour it is necessary to destroy the various kinds of fungi living on the surface of the fruit. It has been found that this can be done safely, rapidly and inexpensively by immersion for a short time in a dilute solution of a hypochlorite. Accordingly the process provided by the present invention consists in dipping the goods individually as a whole into an aqueous solution of alkali metal or alkaline earth metal hypochlorite and thereupon storing or trans-

[*Price* 1/-]

porting them in heaps so that the latter are ventilated by air which is moist, or if necessary has been artificially moistened. Preferably the quantity of hypochlorite in the aqueous solution used always remains below one per thousand by weight.

A great advantage obtained by using hypochlorite is that during its work it becomes converted into chloride, i.e. into an entirely harmless kind of salt, e.g. in the case of sodium hypochlorite into kitchen salt, and that it is so effective that, owing to the insignificantly small quantity in which it has to be employed, the quantity of salt into which it is converted will also be so low as to be inappreciable. It is because of this double advantage that water works all the world over are able to use hypochlorite produced by chlorination for the sterilisation of drinking water.

A further advantage resulting from the use of a hypochlorite is the danger of infection threatening those consuming the crude products, e.g. the danger of typhoid fever, is excluded. The danger of such an infection cannot be excluded by means of cooling alone, whilst, moreover, cooling is much more expensive than the application of hypochlorite described.

As an example of the efficacy of the process provided by the invention, it may be mentioned that eggs treated in accordance therewith and stored at ordinary temperature, that is to say without artificial cooling, for a period of more than six months have proved to be perfectly fresh and alive, this latter word being used in the sense that the eggs can be hatched in the ordinary way, the percentage of such stored eggs which can be successfully hatched being practically the same as the percentage obtained with eggs of the same kind which are actually fresh, i.e. have not been stored in accordance with the invention.

It is to be clearly understood that the present invention relates only to the treatment of organic goods comprising living entities and does not include the treatment of dead organic matter like meat and hides.

Furthermore we make no claim to the use of the process of our invention in contravention of the provisions of the Public Health (Preservatives etc. in Food) Regulations, 1925—7.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A process for maintaining the freshness and vitality of fruits, vegetables, greens and eggs, that is, organic goods which are to be regarded as masses of, or containing, living entities having slow metabolism, characterised by the feature that the goods are each dipped as a whole into an aqueous solution of alkali metal or alkaline earth metal hypochlorite and thereupon are stored or transported in heaps so that the latter are ventilated by air which is moist, or if necessary has been artificially moistened.

2. A process as claimed in claim 1 characterised by the feature that the hypochlorite solution contains less than one part of hypochlorite per thousand by weight.

3. The improved process for maintaining the freshness and vitality of fruits, vegetables, greens and eggs substantially as hereinbefore described.

Dated this 21st day of March, 1939.

MARKS & CLERK.

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